

## Nitomortar ELS

**Spray-applied, trowel finished, high build, chemical and abrasion resistant epoxy liner system - (3 mm to 20 mm thickness)**

### SECTION A: GENERAL COMMENTS

#### HIGH AND LOW TEMPERATURE WORKING

It is suggested that, for temperatures above 35°C or below 5°C, the following guidelines are adopted as good working practise:

- I. Store unmixed materials in dry conditions, in original unopened packs, avoiding exposure to direct sunlight. It is recommended to pre-condition the materials between 20-25°C if possible, prior to mixing and application.
- II. In high temperature environments, keep equipment cool, arranging shade protection if necessary. It is especially important to keep cool those surfaces of the equipment that come into direct contact with the material itself.
- III. Try to avoid application during the hottest times of the day, arrange temporary shading as necessary.
- IV. At ambient temperatures above 35°C, *Nitomortar ELS* will have a shorter pot life and working life. The material should not be applied in direct sunlight.
- V. At lower temperatures, *Nitomortar ELS* should be applied only when the substrate temperature and the ambient temperature is above 5°C and rising.
- VI. Make sufficient material, plant and labour available to ensure that application is a continuous process.

#### EQUIPMENT

It is suggested that the following list of equipment is adopted as a minimum requirement for the correct application of this material:

- Protective clothing :      - Protective overalls, safety helmet and safety shoes  
    - Good quality gloves, goggles and face mask (items such as safety harness; breathing apparatus may be required when applying material in some confined spaces, subject to all relevant safety requirements)
- Preparation equipment :   - Proprietary grit blasting equipment or high pressure washer
- Mixing equipment :        - Festo slow speed drill, 400-500 rpm  
    + Mixing paddle
- Application equipment :   - Pump – Graco King 68:1 or Graco Extreme 80:1, cart mounted airless sprayer c/w high pressure filter with 13mm outlet  
    + Hose – Graco 13mm airless hose no more than 15 metres  
    + Spray gun – Graco hydramastic airless gun with 525 (or larger) reversible tip and 13 mm gun swivel  
    + Compressed air is required, minimum compressor is 85 cfm @ 100psi. Air hose diameter minimum is 19 mm

## Pump set up notes –

- (a) remove suction hose / tube. Pump should be immersed directly into mixed product
- (b) high-pressure filter should have 30-mesh element
- (c) when spraying, it is recommended to change pails, not pour newly mixed material into existing pail
- (d) pump operator should be aware of material pot-life. If sprayer is left idle for more than 50% of pot-life, it should be flushed out with Solvent 10 (eg. At 20°C material should not be left in the pump for longer than 15 minutes).
- (e) It is anticipated that the pump will require re-packing on a regular basis. Extra care with solvent flushing and cleaning will extend pump packing life
- (f) It is anticipated that the spray tips will require replacement over a period of time.  
N.B. For all Spray Pump enquiries Parchem suggest contacting: Blastmaster – Rick Gooden, Ph: 1800 882 229
- (g) Steel trowels are required for finishing of the spray applied *Nitomortar ELS*.

## APPLICATION – POINTS OF NOTE

Parchem operates a policy to encourage the use, where possible, of recommended applicators, since the long-term performance of the materials is dependant upon proper application. For contractors who wish to apply the materials themselves, Parchem is also able to offer technical assistance and training.

### 1.0 SURFACE PREPARATION

Clean the surface and remove any dust, unsound or contaminated material, plaster oil, paint, grease, corrosion deposits or algae.

## SECTION B: APPLICATION METHOD

To ensure all potential contamination and laitance has been removed, the surface should preferably be prepared using high-pressure water jetting (up to 3000 Psi) or light abrasive blasting, followed by thorough washing to remove dust and remaining particles.

Oil and grease deposits, should be removed by steam cleaning, detergent, scrubbing or the use of a proprietary degreaser. The effectiveness of decontamination should then be assessed by a pull-off test.

- 1.1 Prior to the application of *Nitomortar ELS*, all active hydrostatic leaks must be stopped by using *Vandex Plug*, an hydraulic cement material specifically formulated to stop water ingress. A saturated surface dry (SSD) substrate (or drier) condition is required prior to the application of the *Nitomortar ELS*.
- 1.2 To those areas where concrete repairs have been carried out using *Nitomortar BH* or *Nitomortar EL-HB*, the *Nitomortar ELS* can be applied within a 48 hour period of the original application of the *Nitomortar BH* or *Nitomortar EL-HB* as long as the surface is clean and has not been wet, through immersion or condensation. If more than 48 hours elapses between applications, or if the surface has been immersed or wet through condensation then the surface must be mechanically prepared by abrasive blasting.  
  
The *Nitomortar BH* or *Nitomortar EL-HB* material is to be finished to a smooth, even surface with steel trowel to provide a firm compacted surface with care taken to prevent surface imperfections that may create potential air pockets. Then the exposed *Nitomortar BH* or *Nitomortar EL-HB* surface is to receive a stiff brush finish to provide improved bonding interface with ensuing *Nitomortar ELS* application.
- 1.3 Any other repair materials utilised will be similarly prepared in accordance with the manufacturer's recommendations prior to the application of the *Nitomortar ELS*.

## 2.0 MIXING

- 2.1 Before mixing the *Nitomortar ELS* epoxy mortar, the contractor shall ensure that sufficient and correct areas for reinstatement are prepared and ready to receive the sprayed epoxy mortar.
- 2.2 Only mixes using complete packs of *Nitomortar ELS* shall be allowed and part mixes are not permitted.
- 2.3 Mixing shall be carried out only with appropriate mixing equipment, strictly in accordance with current TDS product instructions for use. *Nitomortar ELS* shall be mechanically mixed. The material is supplied to site as 16 litre packs. The base material is white in colour and the hardener is dark grey. When mixed together, the product is grey in colour.
- 2.4 The Base and Hardener components shall be each stirred thoroughly to disperse any settlement before mixing them together.
- 2.5 The complete contents of the Hardener should be emptied into the Base container and be mixed thoroughly using a slow speed electric drill fitted with an appropriate spiral stirrer for approximately 5 minutes until a uniform colour and consistency has been produced. Under no circumstances should part packs be used.
- 2.6 Do not thin components, as solvents will prevent proper cure.

## 3.0 APPLICATION

- 3.1 *Nitomortar ELS* is spray applied using specialised equipment (e.g. Graco King 68:1 or Graco Extreme 80:1) and applicators are strongly advised to carry out trials prior to proceeding with any contract.
- 3.2 To avoid applied material sagging on vertical or overhead surfaces, do not apply *Nitomortar ELS* at thicknesses greater than 10 mm per layer.
- 3.3 The required coating thickness is typically developed over multiple passes of 5 mm to 10 mm thickness. This layer thickness depends on the slump of the material, that in turn is a function of the thickness of the coating, the temperature of the material, and the shear developed by the mixing, pumping, and spraying processes. The thickness of the epoxy mortar coating may vary as required to suit the geometry of the substrate.
- 3.4 Where the material is applied in layers, any subsequent coats of the *Nitomortar ELS* can be applied within a 24 to 48 hour period of the original application, if the surface is clean and dry (as long as there hasn't been any effluent flow, condensation or contamination over these areas. Refer to 4.1 Rectification of Product, that has been subject to immersion or contamination procedure).
- 3.5 If more than 48 hours elapses between coats or if previous coats have been subject to an effluent flow, condensation or contamination over these areas, surface must be dried and prepared by roughening surface using abrasive grit blasting.  
N.B. The product needs to cure for a minimum of 12 hours at 18°C before being abraded.  
It is important to note that the time intervals between coats should be kept to an absolute minimum, and the 24 to 48 hour window is dependant on the temperature at which the material was originally applied and the substrate temperature. At an application temperature of 25°C the maximum re-coat time is 48 hours.
- 3.6 An alternative to abrasive blasting is to sand seed any uncompleted areas, or end lap areas equal to the epoxy spray fan width, at the end of a day's application.  
This sand to be a washed, dried, magnetically separated, graded 1 mm or 2 mm sand (eg. Unimin 1 mm or 2 mm sand).
- 3.7 The sand is to be hand cast evenly onto the wet applied surface by hand, at the end of a shift to provide a mechanical key for the subsequent layers.  
At the start of a new shift, *Nitomortar ELS* will be applied with a lap length equal to the epoxy spray fan width.
- 3.8 The completed material final surface should not be over worked. The finished surface should be smooth to touch. To close the final surface to a smooth finish, use a steel trowel.
- 3.9 Any mechanical damage, abrupt irregularities or surface imperfections, such as blisters, runs or sags are to be removed and/or re-applied (see 4.3 Localised Defects).  
All core holes to be hand patched with the *Nitomortar EL-HB* mortar. *Nitomortar EL-HB* is to be applied in accordance with the current product Technical Data Sheet procedures.

## 4.0 REMEDIAL WORK

### 4.1 Rectification of Product -That Has Been Subject to Immersion, Condensation or Contamination:

Note that the sewer environment can be very humid. If a condensation occurs on an epoxy surface which requires further overcoating (eg, dft augmentation or day to day overlaps) then the epoxy surface must be mechanically prepared prior to overcoating in order to ensure a strong bond.

Where the applied product is already of 20 mm thickness (or that required thickness nominated by the contract), and has cured for more than 12 hours at 18°C, no treatment need be carried out unless the product has been physically damaged or is to be over-coated.

Where the immersed or contaminated product has cured for less than 12 hours at 18°C, it should be allowed to complete a minimum of 12 hours cure.

The immersed or contaminated product should then be pressure washed (e.g. using a Gerni or similar), dried (using a clean, dry cloth or hot, clean air), then dry grit abraded, and any loose residue removed (e.g. by brushing) before starting application of the fresh product.

Any visibly contaminated product must be removed, by cutting out if necessary.

Any uncoated concrete similarly subject to immersion or contamination should be thoroughly pressure washed and be SSD or drier prior to application of the product.

### 4.2 Curing:

*Nitomortar ELS* typically reaches its initial set after approximately 30 minutes at around 20°C. After 3 days it is 80% cured and is essentially cured in 7 days at 20°C.

As part of a Quality Control procedure, visual checks are to be carried out to verify the cure of the product, which will monitor streaks, any striping and a consistent concrete grey colour.

Further information in this regard is contained in the Technical Data Sheets.

### 4.3 Localised Defects:

Any localised defects will be removed and reapplied. This will be done by first saw cutting and removing the defective area. The area around the repair will then be abraded before re-application of the epoxy mortar.

### 4.4 DFT Augmentation:

Where augmentation of the applied dry film thickness of the liner is required the surface must be prepared by roughening the surface using light abrasive blasting. Additional *Nitomortar ELS* will then be applied to build the surface up the required DFT.

### 4.5 Clean Up:

The clean up of epoxy spray / hand equipment is to be completed outside the cell or area of application wherever practicable, as the solvent used is highly toxic.

## SECTION C: IMPORTANT NOTE

This method statement is offered by Parchem as a 'standard proposal' for the application of Emer-Seal PU25. It remains the responsibility of the Customer to determine the correct method for any given application.

Parchem does not accept any liability either directly or indirectly for any losses suffered in connection with the use or application of the product whether or not in accordance with any advice, specification, recommendation or information given by it.